

REMARKS

Claims 1-13 are all the claims presently pending in the application. Claims 2-3, 5-6, 7, 9, 11 and 12 have been amended to more particularly define the invention. Claim 13 has been added to assure Applicant the degree of protection to which his invention entitles him. Claims 1 has been canceled without prejudice or disclaimer in the interest of expediting prosecution.

It is noted that the claim amendments herein or later are not made to distinguish the invention over the prior art or narrow the claims or for any statutory requirements of patentability. Further, Applicant specifically states that no amendment to any claim herein or later should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the amended claim.

With respect to the prior art rejections, claims 1, 5, 9, and 11 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Eydelie et al. (U.S. Patent Publication No. 2002/0149278) in view of Oda et al. (U.S. Patent No. 5,886,433). Claims 2-4, 6, 10 and 12 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Eydelie et al. in view of Oda et al. in view of Holzheu et al. (U.S. Patent Publication No. 2004/0135457). Claim 7 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Eydelie et al. in view of Oda et al. further in view of Ouchi (JP 2000-333400 submitted by applicant). Claim 8 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Eydelie et al. in view of Oda et al. in view of Holzheu et al. further in view of Ouchi.

These rejections are respectfully traversed in the following discussion.

I. THE CLAIMED INVENTION

An exemplary aspect of the present invention, as recited in claim 2, is directed to an interconnection assembly including phase parts for U phase, V phase and W phase. The phase parts each include a plurality of interconnection assembly parts that are connected in the form of a ring and include a plurality of individual insulated wires that each comprise a single-wire conductor and a fluororesin insulation formed on the single-wire conductor. The plurality of individual insulated wires each include a conductor section with the fluororesin insulation stripped at an end thereof. The plurality of individual insulated wires are electrically connected to each other at the conductor section to which a motor coil wire is connected.

Another aspect of the invention, as recited in claim 11, is directed to a method of making an interconnection assembly including providing a plurality of individual insulated wires that each comprise a single-wire conductor and a fluororesin insulation formed on the single-wire conductor, stripping a fluororesin insulation at an end of the plurality of individual insulated wires to expose a conductor section to form interconnection assembly parts, and electrically connecting a plurality of said interconnection assembly parts at said conductor section to each other to form phase parts for U phase, V phase and W phase.

Conventional interconnection assemblies used to connect with the motor coil wire generally include four lead frames 21 for U phase, V phase, W phase and grounding. The lead frames 21 are often made by punching a square copper plate 24. The lead frames 21 are then stacked in a vertical direction and molded with super-engineering molding resin 27.

(See Application at Figures 1-3, and page 1, lines 14-22)

However, as the diameter of a stator of the motor increases, so does the size of the interconnection assembly and the amount of current handled. Because of this, the temperature of the lead frames 21 rises and, consequently, so does the temperature of the molding resin 27. However, due to the difference in linear expansion coefficients of the lead frames 21 and the molding resin 27, large amounts of strain are created between the lead frames 21 and molding resin 27. (See Application at page 2, lines 4-13)

Therefore, when the current carrying capacity changes severely, such as during starts and normal operation of the motor, cracks may be formed in the molded resin 27 and the insulation performance of the molding resin 27 may be adversely affected. (See Application at page 2, lines 14-19)

On the other hand, as recited in claim 2, and similarly in claim 11, the invention features that phase parts for U phase, V phase and W phase each comprise a plurality of interconnection assembly parts that comprise a plurality of individual insulated wires that each comprise a single-wire conductor and a fluororesin insulation formed on said single-wire conductor.

Due to the assembly structure of connecting the plural individual insulated wires each of which have some flexibility, even when temperature rise in the wires occurs locally during the operation of a motor, strain can be eliminated that may be locally generated between the conductor and the insulation corresponding to the local temperature rise.

Therefore, the interconnection assembly of the invention can prevent the occurrence of a crack in the insulation caused by the local strain.

II. THE PRIOR ART REFERENCES

A. The Eydelie et al. Reference

Eydelie et al. discloses a stator for a rotary electric machine including a stator magnetic circuit having teeth and individual coils each engaged on a tooth. (See Eydelie et al. at Abstract)

The Examiner concedes on page 2 of the Office Action that Eydelie et al. does not teach or suggest “*a fluororesin insulation formed on [the] single-wire conductor,*” as recited in independent claims 2 and 11.

Further, Eydelie et al. fails to teach or suggest that the plurality of interconnection assembly parts “*comprise a plurality of individual insulated wires that each comprise a single-wire conductor and a fluororesin insulation formed on [the] single-wire conductor,*” as recited in independent claim 2, and similarly in independent claim 11.

Rather, Eydelie et al. discloses a continuous electrical conductor 150 with insulation. As such, the electrical conductor 150 with insulation of Eydelie et al. cannot prevent strain that may be locally generated between the conductor and the insulation corresponding to the local temperature rise since it only has the continuous electrical conductor 150 with insulation. (See Eydelie et al. at Figure 8)

Further, it is apparent that Eydelie et al. discloses the electrical conductor 150 is a plural-wires conductor. As is clearly shown in the stripped portion 151 of Figure 8, the electrical conductor 150 is formed of a plurality of windings, which is clearly different from the single-wire conductor of the claimed invention. (See Eydelie et al. at Figure 8).

Clearly, there are elements of the claimed invention that are not taught or suggested by Eydelie et al.

B. The Oda et al. Reference

The Examiner alleges that Eydelie et al. would have been combined with Oda et al. to form the inventions defined by claims 5, 9 and 11. However, Applicant submits that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of claims 5, 9 and 11.

Oda et al. discloses a dynamoelectric machine including a plurality of cooling tubes disposed in or around the stator core of the machine and through which coolant flows. (See Oda et al. at Abstract)

Applicant respectfully submits that these references would not have been combined as alleged by the Examiner. Indeed, these references are completely unrelated, and no person of ordinary skill in the art would have considered combining these disparate references, absent impermissible hindsight.

In fact, Applicant submits that the Examiner can point to no motivation or suggestion in the references to urge the combination as alleged by the Examiner. Indeed, contrary to the Examiner's allegations, neither of these references teach or suggest their combination.

Therefore, Applicant respectfully submits that one of ordinary skill in the art would not have been so motivated to combine the references as alleged by the Examiner. Therefore, the Examiner has failed to make a prima facie case of obviousness.

As noted above, the Examiner concedes that Eydelie et al. does not teach or suggest "*a fluororesin insulation formed on [the] single-wire conductor*," as recited in claims 5, 9 and 11. Instead, the Examiner attempts to rely on Oda et al. to make up for the deficiencies of Eydelie et al.

However, Oda et al. fails to make up for the deficiencies of Eydelie et al. described above directed toward the plurality of interconnection assembly parts including “*a plurality of individual insulated wires that each comprise a single-wire conductor and a fluororesin insulation formed on [the] single-wire conductor,*” as recited in claims 5 and 9, and similarly in independent claim 11. Indeed, neither Eydelie et al., nor Oda et al., nor any combination thereof teaches or suggests this feature.

Thus, even assuming arguendo that Oda et al. may disclose a fluororesin insulation, as alleged by the Examiner, there is no teaching or suggestion in Oda et al. that interconnection assembly parts include a plurality of individual insulated wires, as claimed, so that even when temperature rise in the wires occurs locally during the operation of a motor, strain can be eliminated that may be locally generated between the conductor and the insulation corresponding to the local temperature rise and the occurrence of cracks in the insulation caused by the local strain can be prevented. Indeed, the Oda et al. does not even recognize the desirability or benefit of providing such a feature. Therefore, Oda et al. clearly does not make up for the deficiencies of Eydelie et al.

In light of the above, Applicant submits that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of claims 5, 9 and 11. Therefore, the Examiner is respectfully requested to withdraw this rejection.

C. The Holzheu et al. Reference

The Examiner alleges that Eydelie et al. would have been combined with Oda et al. and Holzheu et al. to form the inventions defined by claims 2-4, 6, 10 and 12. However,

Applicant submits that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of claims 2-4, 6, 10 and 12.

Holzheu et al. discloses a winding arrangement for an electric machine with a polyphase winding. (See Holzheu et al. at Abstract)

Applicant respectfully submits that these references would not have been combined as alleged by the Examiner. Indeed, these references are completely unrelated, and no person of ordinary skill in the art would have considered combining these disparate references, absent impermissible hindsight.

In fact, Applicant submits that the Examiner can point to no motivation or suggestion in the references to urge the combination as alleged by the Examiner. Indeed, contrary to the Examiner's allegations, neither of these references teach or suggest their combination.

Therefore, Applicant respectfully submits that one of ordinary skill in the art would not have been so motivated to combine the references as alleged by the Examiner. Therefore, the Examiner has failed to make a prima facie case of obviousness.

The Examiner concedes that the combination of Eydelie et al. and Oda et al. does not teach or suggest that the "*phase parts each include a plurality of interconnection assembly parts that are connected in the form of a ring*," as recited in claims 2-4, 6 and 10, and similarly in claim 12. Instead, the Examiner attempts to rely on Holzheu et al. to make up for the deficiencies of Eydelie et al. and Oda et al.

However, Holzheu et al. fails to make up for the deficiencies of Eyderlie et al. and Oda et al. described above directed toward the plurality of interconnection assembly parts including "*a plurality of individual insulated wires that each comprise a single-wire*

conductor and a fluororesin insulation formed on [the] single-wire conductor,” as recited in claims 2-4, 6 and 10, and similarly in claim 12. Indeed, neither Eydelie et al., nor Oda et al., nor Holzheu et al., nor any combination thereof teaches or suggests this feature.

Rather, Holzheu et al. only discloses a conductor rail 40, 42, 44, 46 made of individual ring sectors 45. The ring sectors 45 are securely press-fitted to each other. (See Holzheu et al. at Figure 6, and paragraph [0065])

As such, the conductor rail of Holzheu et al. cannot prevent strain that may be locally generated between any one of the individual ring sectors and its insulation corresponding to the local temperature rise since it only has the ring sectors 45 securely press-fitted to each other.

In addition, one of ordinary skill in the art would not have been motivated to modify the phase parts of Eydelie in view of the phase parts as taught by Holzheu. This is because Holzheu does not teach or suggest using any insulated wires instead of the ring sectors 45. In this regard, the Examiner states “because it would increase the stability of the phase parts (Holzheu, Paragraph 65)”. However, this is not reasonable because Holzheu discloses that “the joints between the sectors of interlaced conductor rails are offset, thus increasing the stability of the conductor rail unit.” (See Holzheu et al. at paragraph [0065])(Emphasis added)

In brief, Holzheu only teaches that the offset of the joints 43, 43’ results in the stability of the conductor rail unit. (See Holzheu et al. at Figure 7 and paragraph [0066])

The invention, as recited in independent claim 2, further features “said plurality of individual insulated wires are electrically connected each other at said conductor section to which a motor coil wire is connected.” Thus, even assuming arguendo that one of ordinary skill in the art could be motivated to modify the phase parts of Eydelie in view of the phase

parts as taught by Holzheu, the above feature of the invention cannot be completed such that the connection relationships between the individual insulated wires and between the insulated wires and the motor coil wire are simultaneously formed at the conductor section.

In light of the above, Applicant submits that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of claims 2-4, 6, 10 and 12. Therefore, the Examiner is respectfully requested to withdraw this rejection.

D. The Ouchi Reference

The Examiner alleges that Eydelie et al. would have been combined with Oda et al. and Ouchi to form the invention defined by claim 7. The Examiner further alleges that Eydelie et al. would have been combined with Oda et al., Holzheu et al., and Ouchi to form the invention defined by claim 8. However, Applicant submits that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of claims 7 and 8.

Ouchi discloses an injection molded terminal block where a plurality of are layered at appropriate intervals and resin molded integrally. (See Ouchi at Abstract)

Applicant respectfully submits that these references would not have been combined as alleged by the Examiner. Indeed, these references are completely unrelated, and no person of ordinary skill in the art would have considered combining these disparate references, absent impermissible hindsight.

In fact, Applicant submits that the Examiner can point to no motivation or suggestion in the references to urge the combination as alleged by the Examiner. Indeed, contrary to the

Examiner's allegations, neither of these references teach or suggest their combination.

Therefore, Applicant respectfully submits that one of ordinary skill in the art would not have been so motivated to combine the references as alleged by the Examiner. Therefore, the Examiner has failed to make a prima facie case of obviousness.

The Examiner concedes that the combination Eydelie et al., Oda et al., and Holzheu et al. does not teach or suggest that “[the] phase parts are partially fixedly bundled,” as recited in claims 7 and 8. Instead, the Examiner attempts to rely on Ouchi to make up for the deficiencies of Eydelie et al., Oda et al., and Holzheu et al.

However, Ouchi fails to make up for the deficiencies of Eydelie et al., Oda et al., and Holzheu et al. described above directed toward the plurality of interconnection assembly parts including “a plurality of individual insulated wires that each comprise a single-wire conductor and a fluororesin insulation formed on [the] single-wire conductor,” as recited in claims 7 and 8. Indeed, neither Eydelie et al., nor Oda et al., nor Holzheu et al., nor any combination thereof teaches or suggests this feature.

Thus, even assuming arguendo that Ouchi may disclose that the phase parts are partially fixedly bundled, as alleged by the Examiner, there is no teaching or suggestion in Ouchi that interconnection assembly parts include a plurality of individual insulated wires, as claimed, so that even when temperature rise in the wires occurs locally during the operation of a motor, strain can be eliminated that may be locally generated between the conductor and the insulation corresponding to the local temperature rise and the occurrence of cracks in the insulation caused by the local strain can be prevented. Indeed, the Ouchi does not even recognize the desirability or benefit of providing such a feature. Therefore, Ouchi clearly does not make up for the deficiencies of Eydelie et al., Oda et al., and Holzheu et al.

In light of the above, Applicant submits that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of claims 7 and 8. Therefore, the Examiner is respectfully requested to withdraw this rejection.

III. FORMAL MATTERS AND CONCLUSION

The title has been amended to be more indicative of the invention to which the claims pertain and to overcome the Examiner's objection to the title.

In view of the foregoing, Applicant submits that claims 1-13, all the claims presently pending in the application, are patentably distinct over the prior art of record and are allowable, and that the application is in condition for allowance. Such action would be appreciated.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned attorney at the local telephone number listed below to discuss any other changes deemed necessary for allowance in a telephonic or personal interview.

To the extent necessary, Applicant petitions for an extension of time under 37 CFR §1.136. The Commissioner is authorized to charge any deficiency in fees, including

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extension of time fees, or to credit any overpayment in fees to Attorney's Deposit Account

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Respectfully Submitted,

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